

Amendments to the Claims

Please amend paragraph 53 of the original specification (paragraph 56 of the Substitute Specification), as follows:

In the case of the embodiment examples shown in the figures, additive material will be considered to be color 8 (~~not shown~~) and in the further course of the description of the embodiment, the explanation will take this as a base of the said additive material, although other additives exist for the various versions of the brushes or the brush handles, as has already been discussed in the introductory paragraphs. In the embodiment as shown in Fig. 1, the color 8 is introduced inside the main distributor 6, by means of which, the injection material coming from the injection unit 2 for the production of colored toothbrush bodies will be colored. The color feed is done here within the main distributor 6 and thus the coloration proceeds through the main feed line 9 to the individual nozzles 7. The injection material conveyed from the injection unit 2 in the direction of the arrow Pfl mixes itself with the entering color from the color feed 10 of the main feed line 9, whereby in the additional travel distance to the entry openings of the molds, a sufficient mixing of the injection material takes place. Of essential interest in this case, is that the color is not immediately added in the area of the injection unit 2, so that, in case of a necessary change of color, only the colored injection material in the connecting channel length downstream and behind the color feed is retained, which, upon the change of color must be purged by continuous injection molding. Since the feed of color is carried out first in the main feed channel 9, on this account, the channel volume to be purged is substantially reduced. The color feed 10, which opens into one of the channels of a distributor arrangement 4, 4a, encompasses a feed line 11, a pump 12 as well as a supply tank 13 for the color 8. The pump 12 is advantageously designed both as a transport and dosage metering pump, so that specified quantities of color can be mixed with the injection material.

Amendments to the Claims

This listing of claims will replace all prior versions, and listings of claims in the application.

Claims 1-7 (canceled).

8. (currently amended) An injection molding machine for the manufacture of injection molded articles, ~~in particular of toothbrush bodies, with comprising:~~
an injection molding die [[(1)]];
~~and an~~ an injection unit [[(2)]] feeding a plurality of mold cavities [[(5,)]];
a heated distributor channel arrangement [[(4)]] with distributor ~~or conveyance~~
channels [[(150)]] that carry injection material between the injection unit [[(2)]] and
individual said mold cavities [[(5)]];
~~and at least one~~ a mixing apparatus [[(450)]] for the injection material[[,]], and
~~at least one~~ a connection for an additive feed line, wherein the ~~mixing~~ apparatus
and the connection for the additive feed line ~~are integrated into~~ is in the heated
distributor channel arrangement (4, 4a, 100), [[and]]
[[that]] wherein the mixing apparatus is part of the distributor ~~or conveyance~~
channels (150) of the heated distributor channel arrangement (4) ~~and that and the~~
additive feed[[s]] line for the additive (8) is ~~(are)~~ connected to the ~~to a~~ channel main
distributor (6) ~~or the~~ or a channel subdistributor [[(14)]] connected to the injection unit
[[(2)]] ~~and/or in~~ or to a nozzle connected to the mold cavity.

9. (currently amended) An injection molding machine in accordance with Claim 8, ~~characterized in that wherein the additive feed line lines for additives (8) are is~~ connected to ~~the~~ [[a]] channel subdistributor [[(14)]] and/or a ~~or the~~ channel main distributor [[(6)]].

10. (currently amended) An injection molding machine in accordance with Claim 8, ~~characterized in that the connection for the additive feed line [[(10)]] for the additive material (8) can be closed.~~

11. (currently amended) An injection molding machine in accordance with ~~Claim 8~~ claim 10, ~~characterized in that the further comprising a shutoff valve [[(15)]] which is~~ designed as a dosage valve for the additive material [[(8)]].

12. (currently amended) An injection molding machine in accordance with Claim 8, ~~characterized in that in a case of further comprising a plurality of [[line]] connections [[(10)]] for additives (8) additive fed lines, wherein at least one of the plurality of connections is connected directly to a mold cavity one of the mold cavities [[(5)]].~~

13. (currently amended) An injection molding machine in accordance with Claim 8, ~~characterized in that wherein the mixing apparatus includes at least one mixing chamber [[(17)]] formed by a cross-sectional change, preferably by a cross-sectional expansion.~~

14. (currently amended) An injection molding machine in accordance with Claim 8, characterized in that a hot channel distributor (100) is provided for handling of melts (101), which, before injection into the mold cavities have been mixed with at least one additive material, and the hot channel distributor (100) includes a melt channel (150) arrangement, in which at least one feed line section (151) is provided for delivery of the additive material (102), an additive material line, with a terminating outlet into said feed line section (151), wherein the mixing apparatus includes at least one mixer (300) aligned in [[the]] a direction of flow, and in that wherein the mixer (300) is formed as a mixing section which includes at least a first section and a second section, two sections (301, 302), the axes of which are not aligned to coincide with one another.

15. (currently amended) An injection molding machine in accordance with Claim 14, characterized in that the hot wherein the channel main distributor (100) is a connectable main distributor incorporating distributor (140) with coupled to each of a plurality of the channel subdistributors (130), the melt channel (150) of which, branches to the individual subdistributors (130), and said distributor (140) connects to an additive line (200) that exits into the through a feed line (151) for the additive feed line followed by mixer (300) the mixer placed in the direction of flow and branches respectively to one or more subdistributors (130) at a connection point (131).

16. An injection molding machine in accordance with Claim 14, characterized in that the hot wherein the channel main distributor (100), which is provided as a

~~connectable is connected to a plurality of channel subdistributors subdistributor with a plurality of hot runner nozzles (160) and includes a subdistributor 130 and the melt channel (150), branches to the and each channel subdistributor is connected to an additive feed line (200) which flows into the feed line section (151) as well as to the mixer (300) which is placed in the direction of flow after the channel subdistributors and before a branching (161) leading to the hot runner nozzles (160).~~

17. (currently amended) An injection molding machine in accordance with Claim 15, characterized in that by the use of a wherein the plurality of mixers (300) the are of equal length and [[the]] cross-section of the single mixing sections are made equal for the attainment of balanced flow ratios.

18. (currently amended) An injection molding machine in accordance with Claim 14, characterized in that the wherein an exit opening (303) of the first section (301) of the mixer is connected to [[the]] an entry opening (304) of the second section of the mixer (302) of the two sections (301, 302), by a flow direction reversal fitting (305) of the melt channel (150), wherein [[the]] a first direction of flow in the first section (301) is essentially opposite to [[the]] a second direction of flow in the second section (302).

19. (currently amended) An injection molding machine in accordance with Claim 18, characterized in that wherein the exit opening (303) of the first section (301) is connected with the entry opening (304) of the second section (302) by means of a 180° turn-around fitting-(305), whereby the two sections (301, 302) of the mixing length are

made to be parallel to one another.

20. (currently amended) An injection molding machine in accordance with Claim 19, ~~characterized in that the hot channel distributor (100) is wherein the distributor channels are~~ constructed of at least two horizontal planes (170, 180) placed one upon the other, whereby the first section (301) ~~of the mixer~~ is provided in the lower, first plane (170) and the second section (302) is provided in the upper, second plane (180).

21. (currently amended) An injection molding machine in accordance with Claim 20, ~~characterized in that the hot channel distributor (100) is wherein the distributor channels are~~ divided along the two planes (170, 180) into a lower layer, a middle layer and an upper layer (190, 191, 192), whereby grooves are provided in each layer, (190, 191, 192) ~~grooves are provided~~, and whereby, after [[the]] soldering of the layers (190, 191, 192) by a vacuum diffusion process, the grooves of adjacent layers (190, 191) and (191, 192) form, respectively, lower and upper halves (152, 153) of the ~~melt channel~~ (150) distributor channels.

22. (currently amended) An injection molding machine in accordance with ~~Claim 18, characterized in that with claim 14, wherein~~ the first and the second sections (301, 302) are respectively provided as static mixers (450).

23. (currently amended) An injection molding machine in accordance with Claim 22, ~~characterized in that wherein~~ the two static ~~mixers~~ mixer elements (450) ~~in the lower~~

~~or the upper half (152, 153) of melt channel (150) are soldered into the distributor channel installed directly in the melt channel (150), i.e. are soldered therein.~~

24. (currently amended) An injection molding machine in accordance with at least one of the Claims 22 and 23, ~~characterized in that~~ wherein the two static mixers elements (450) comprise a plurality of screw shaped, twisting deflection plates (451, 452), which are arranged alternately right and left behind one another, wherein each deflection plate (451) possesses two edges (453) standing at right angles to ~~the material flow direction of flow~~, which are connected with the respective adjacent edge (454) of the neighboring deflection plate (452), and are turned through a specified angle in relation to said adjacent edge (454).

25. (currently amended) An injection molding machine in accordance with Claim 24, ~~characterized in that~~ wherein the edges (453, 454) of the deflection plates which are connected together are turned at an angle of 90° from one another.

26. (currently amended) An injection molding machine in accordance with Claim 24, ~~characterized in that~~ wherein the adjacent edges (453, 454) of neighboring deflection plates (451, 452) are connected together by spot welding.

27. (currently amended) An injection molding machine in accordance with Claim 14, ~~characterized in that in the feed section (151) wherein the connection for the additive feed lines includes an endpiece (201) of the additive feed line (200) penetrates~~

penetrating coaxially into the melt channel (150) distributor channel, thereby forming an annular opening (202) between [[the]] an outer wall of the endpiece (201) and the and an inner wall of the melt channel (150) distributor channel to allow flow of melt.

28. (currently amended) An injection molding machine in accordance with Claim 27, characterized in that wherein a diameter of the endpiece (201) of the additive feed line (200) is smaller than a diameter of the part of the additive feed line (200) which is connected to the endpiece (201).

29. (currently amended) An injection molding machine in accordance with Claim 14 claim 27, characterized in that wherein the additive feed line (200) is connected to a reservoir and a high pressure pump, which pumps the additive material (102) to be mixed out of the said reservoir into the endpiece (201) of the additive feed line (200) and further into the melt distributor channel (150) at a sufficiently high pressure.

30. (currently amended) An injection molding machine in accordance with Claim 29, characterized in that wherein the pressure generated by the high pressure pump is at least as high as the pressure force in the melt distributor channel (150) at the injection point.

31. (currently amended) An injection molding machine in accordance with Claim 30, characterized in that wherein the pressure generated by the high pressure pump is between 1000 bar and 1500 bar.

32. (currently amended) An injection molding machine in accordance with Claim 29, ~~characterized in that~~ wherein the endpiece (201) of the additive feed line (200) can be closed by a needle valve (203) for the dosing of the additive (102), and the ~~said~~ needle valve (203) is intermittently controllable.

33. (currently amended) An injection molding machine in accordance with Claim 32, ~~characterized in that~~ wherein a solenoid (204) activates the needle valve (203) at a frequency of 30 to 100 cycles per second.

34. (currently amended) An injection molding machine in accordance with Claim 32, ~~characterized in that~~ wherein the needle valve (203) travel is limited to 0.1 to 0.01 mm.

35. (canceled).

36. (canceled).

37. (canceled).

38. (currently amended) An injection molding machine in accordance with Claim 8, ~~characterized in that~~ wherein a plurality of additive feed lines feeds (10) are provided in a channel leading to the mold cavities [(5)] in the direction of flow, and ~~in that~~

wherein the additive feed lines feeds (10) can be optionally closed.

39. (currently amended) An injection molding machine in accordance with Claim 8, ~~characterized in that the wherein an entry of the additive feed line [[(10)]] at the distributor channel is designed as an annular opening.~~

40. (currently amended) An injection molding machine in accordance with Claim 8, ~~characterized in that the additive feed (10) includes a further comprising feed line (11), a material propelling means, which is preferably formed by a pump, coupled to the additive feed line, (12) as well as and an additive storage container[[(13)]].~~

41. (currently amended) An injection molding machine in accordance with Claim 8, ~~characterized in that wherein the additive includes at least one of the following: color [[(8)]], preferably in liquid form, granulates, powder, metal platelets, protective material, reinforcing material, mold release means, chemically active additives such as foam agents for cellular products, hardeners, softeners and the like.~~

42. (currently amended) An injection molding machine in accordance with Claim 8, ~~characterized in that wherein the mixing arrangement apparatus comprises a first layer (192) with a half (152) of a distributor or conveyance channel section (150) and a second layer (191) with another half (153) of the distributor or conveyance channel (150), and the mixer apparatus arrangement includes a mixer (450) located between the first and second layers (192, 191), and the first and second layers (192, 191) are connected~~

together.